INTRODUCTION:

Polymer chemistry has a marked and very direct practical impact on the way of life of people in nearly every region of the world. Polymeric materials developed recently by scientists have broad range of applications like fibres, plastics, elastomers, adhesives and resins etc. Recently much stress is given to the synthesis of high performance polymers with increased thermal stability, heat resistance and good mechanical properties as they are extensively required in modern technological applications.[1 , 2]

The polymers containing the *s*-triazine moiety in their backbone are unique in the sense that they exhibit an unusual combination of properties such as high softening temperature and thermal stability together with solubility. The choice of *s*-triazine ring is based on its high thermal stability derived from its molecular symmetry and aromaticity [3].

A survey of literature reveals that the polymers based on *s*-triazine and its derivatives have been extensively studied and utilized since 1950's. Extensive literature exists in thermally stable polymers in which aromatic and heterocyclic rings are linked together in the main chain [4]. A variety of polymers containing *s*-triazine nuclei in the main chain have been reported [5].

Polyesters form one of the most important classes of polymers. They can compete with almost all the known more conventional materials in their characteristic applications [6]. Polyesters have been synthesized by various methods such as direct esterification of dibasic acid with diols [7], by the condensation of diester of dicarboxylic acid and diols [8], from dicarbonyl chloride and diol [9] and from simple diesters of diols with carboxylic acid [10].

Paul de Hoog et al [11] have efficiently synthesized multidentate polynucleating ligands developed from chloride substitutions of *s*-triazine.

Patel K.C et al [12-15] synthesized several homopolycyanurates from 2-morpholino-4, 6-dichloride-*s*-triazine and various diols by interfacial polycondensation.

R.B. Naik et al [16] have synthesized six polycyanurates by stirred interfacial polycondensation of 2-diphenylamino-4, 6-dichloro-*s*-triazine with aromatic diols.

PRESENT WORK:

All polyesters in the present work were synthesized from diacid chloride and various aromatic and aliphatic diols. Polyester synthesis was based on condensation of diester of diols with diester of dioic acid. It involved both ester exchange and acid exchange.

Also copolyesters were synthesized from the various polyesters that were formed above. Co-polyester synthesis was based on addition between the different polyesters.

Ten polyesters were synthesised by polycondensation of 2-(N-Morpholino) -4, 6-bis-(p-hydroxy benzoxy-carbonyl chloride)-*s*-triazine. The resultant monomers were condensed with various aromatic and aliphatic diols. Similarly co-polyesters were synthesized using the same monomer with above diols such as (10 diols).Bisphenol A (BPA), Bisphenol C (BPC), Resorcinol (R), Catechol (C), Phenolphthalein (Ph), Ethylene glycol (EG), Diethylene glycol (DEG), Hydroquinone (Hq), 1,4 -Dihydroxy anthraquinone (1,4-DHA), Triethylene glycol (TEG).

Various diol mixtures to synthesize copolyesters form monomers are:

Bisphenol A + Bisphenol C [BPA + BPC]

Resorcinol + Bisphenol A [R + BPA]

Bisphenol A + Catechol [BPA + C]

Bisphenol C + Phenolphthalein [BPC + Ph]

Bisphenol C + Resorcinol [BPC + R]

Bisphenol-A + 1, 4-dihydroxy anthraquinone [BPA + 1,4-DHA]

Bisphenol-A + 1, 8-dihydroxy anthraquinone [BPA + 1,8-DHA]

Bisphenol-A + Ethylene glycol [BPA + EG]

Bisphenol-A + Phenolphthalein [BPA + Ph]

Phenolphthalein + 1, 4-dihydroxy anthraquinone

Similarly other homopolyesters and copolyesters were synthesized from 2-(N-diphenylino) -4,6-bis-(p-hydroxy benzoxy - carbonyl chloride)-s-triazine and various diols such as Bisphenol C, Resorcinol, Catechol, Phenolphthalein, Ethylene glycol, Diethylene glycol, Hydroquinone, 1,4 -Dihydroxy anthraquinone and Triethylene glycol.

Knowledge of the detailed structures of homo-polymers and co-polymers is necessary for advances in understanding structure-property relationships, advances in synthesis and improvement in usefulness of polymers. Synthesized polymers will be characterized by following techniques: Yield, Colour, Solubility, Density, Viscosity, ^{1}H-NMR Spectra, IR Spectra, and TGA.

IR Spectroscopy is useful technique for the functional group characterization. Hence the polymers will be characterized by IR spectroscopy to determination of functional groups.

^{1}H-NMR Spectroscopy is particularly used in polymers to provide information about the structure of polymer chain, which is valuable in structural elucidation of polymers.

Thermal stability of a polymer provides an important guideline of its usefulness. Several techniques such as thermo gravimetric analysis (TGA) used for investigating the thermal behavior and the determination of thermal stability of polymer samples.

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